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TIDAL CURRENT CHARTS

NEW YORK HARBOR

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TIDAL CURRENT CHARTS, NEW YORK HARBOR

FIFTH EDITION

These current charts show the hourly direction and velocity of the tidal current in New York harbor. They present a comprehensive view of the tidal current movement for the harbor as a whole and also supply a means for readily determining for any time the direction and velocity of the current at various localities.

The charts, which may be used for any year, are referred to the times of high and low water at New York, daily predictions for which are included in the Tide Tables, Atlantic Ocean, published annually by the Coast and Geodetic Survey.

The directions of the current are indicated by red arrows and the velocities by red figures. The velocities, which are expressed in knots, are for the time of spring tides—that is, near the time of new or full moon when the currents are stronger than average. Factors for obtaining the velocities for any day are given below.

Nontidal currents.—These charts depict the flow of the tidal currents under normal weather conditions. Strong winds and freshets, however, bring about nontidal currents which may modify considerably the velocities and directions shown on the charts.

Use of charts.—Twelve charts are given, six being referred to high water and six to low water. The chart to be used for any desired time is determined by obtaining the difference between the desired time and the time of the nearest preceding high or low water for New York as given in the Tide Tables, Atlantic Ocean. The chart with the legend that agrees most nearly with this difference is the one to be used.

Having selected the proper chart, the directions and the spring velocities of the current throughout the harbor are readily obtained from the red arrows and figures on that chart.

The tidal current varies from day to day principally in accordance with the range of the tide, and to obtain the velocities for the particular day the velocities indicated on the charts should be modified by a range factor as follows: Obtain from the tide tables the predicted heights of the high and low waters at New York for the date desired. Subtract the mean of the two low-water heights from the mean of the two high-water heights. This difference gives the range of tide for the day. With this range enter the following table and obtain the corresponding correction factor, using column (A) for factors for the East River and Harlem River and column (B) for all other places. The velocities of the current for the particular day are then obtained by multiplying the velocities indicated on the charts by this factor.

Factors for correcting velocities

Range of tide for day (feet)	(A) Factor for the East and Harlem Rivers	(B) Factor for all other places not included in column (A)
2.4 to 2.9, multiply by	0.7	0.5
3.0 to 3.4, multiply by	0.8	0.6
3.5 to 3.9, multiply by	0.8	0.7
4.0 to 4.5, multiply by	0.9	0.8
4.6 to 5.0, multiply by	0.9	0.9
5.1 to 5.5, multiply by	1.0	1.0
5.6 to 6.0, multiply by	1.0	1.1
6.1 to 6.6, multiply by	1.1	1.2

Example.—Suppose that the direction and velocity of the current in the Hudson River off the Battery is desired for 6 p. m., on a day when the predictions for New York, as given in the Tide Tables, Atlantic Ocean, are as follows:

High water		Low water	
Time	Height	Time	Height
H. m.	*Ft.*	*H. m.*	*Ft.*
0 50 a. m.	3.8	7 04 a. m.	0.4
1 05 p. m.	3.4	7 13 p. m.	0.3

The desired time of 6 p. m. is $4^h\ 55^m$ after the "High water" at 1:05 p. m., this being the nearest preceding tide. The data desired will therefore be found on the chart designated "FIVE HOURS AFTER HIGH WATER AT NEW YORK." This chart indicates that the current in the Hudson River off the Battery is ebbing (setting southward). The number (2.3) shown off the Battery is the velocity of the current at the time of spring tides. To determine the velocity for the particular day, this spring velocity is modified by a factor given in the table "Factors for correcting velocities." From the predictions for New York for that day the range of the tide is found to be 3.2 feet (mean of two high waters=3.6, mean of two low waters=0.4; 3.6−0.4=3.2). For a range of 3.2 feet, column (B) of the table gives a factor of 0.6 to be applied to the velocities given on the chart. The approximate velocity of the current is then found to be $2.3\times0.6=1.4$ knots.

If the time for which information is desired comes about halfway between the times indicated on two successive charts, a better approximation will be obtained by taking an average of the data given on those two charts. This applies especially when the current for any particular place is flowing in opposite directions on the two charts. In such a case, the velocity halfway between the times given on the two charts can be readily obtained by subtracting the smaller velocity from the larger velocity and dividing the difference by two, the direction of the current thus obtained being the same as the direction given for the larger velocity. Obviously, if in the above case the two velocities are approximately equal the current for the time desired will be about slack.

These tidal current charts were prepared by L. P. Disney, chief, section of tide predictions. They are based primarily upon data derived from current surveys made by the Coast and Geodetic Survey and the United States Engineers. In connection with the currents in New York harbor, attention is invited to the Current Tables, Atlantic Coast, published annually by the Coast and Geodetic Survey, which include daily predictions of the times of slack water and the times and velocities of strength of flood and ebb currents for both The Narrows and Hell Gate.

U. S. GOVERNMENT PRINTING OFFICE: 1943 513223

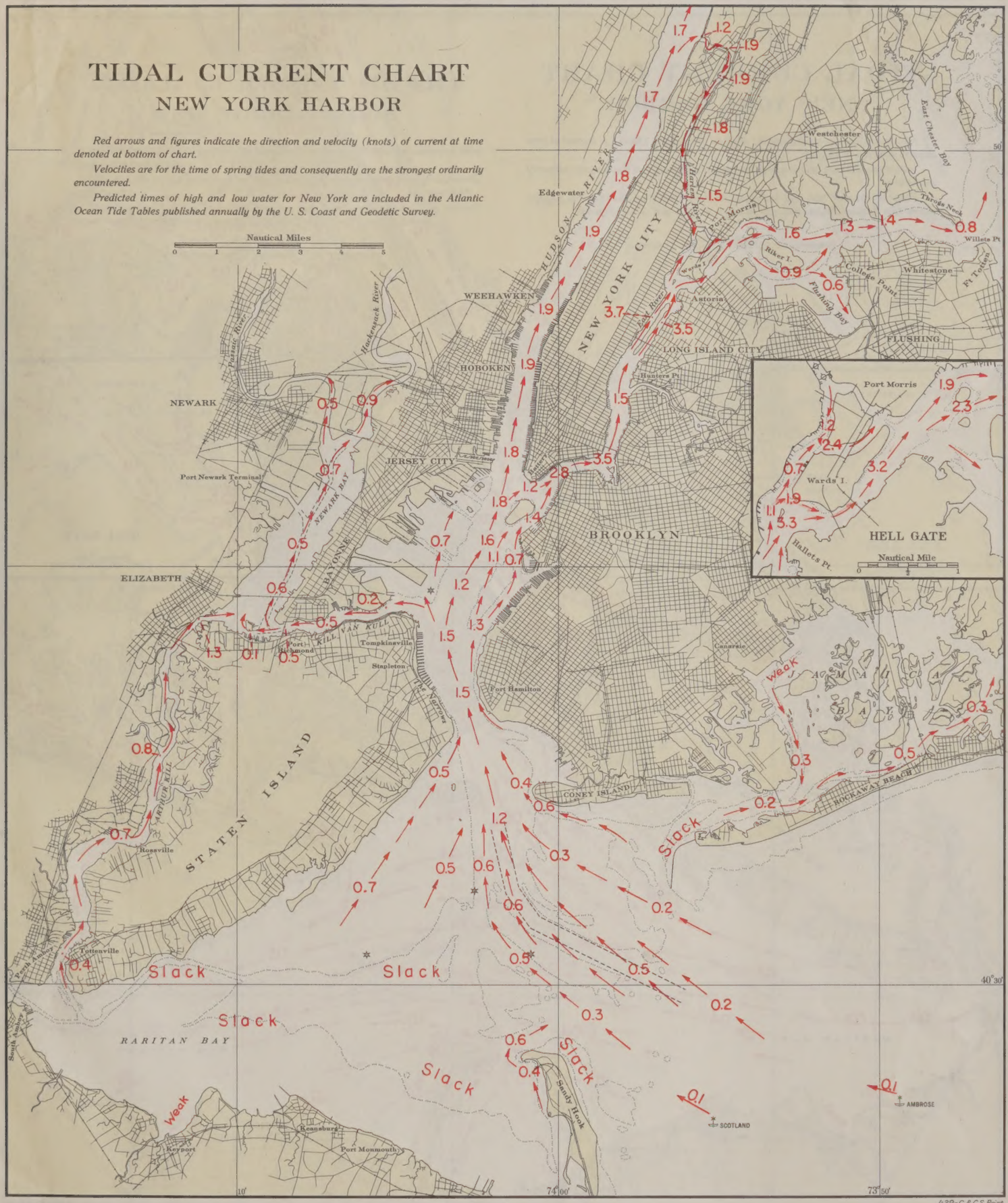
For sale by the Coast and Geodetic Survey, Washington, D. C., and its agents - - - - - - - - - - - - - - Price 25 cents

TIDAL CURRENT CHART
NEW YORK HARBOR

Red arrows and figures indicate the direction and velocity (knots) of current at time denoted at bottom of chart.

Velocities are for the time of spring tides and consequently are the strongest ordinarily encountered.

Predicted times of high and low water for New York are included in the Atlantic Ocean Tide Tables published annually by the U. S. Coast and Geodetic Survey.



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HIGH WATER AT NEW YORK

2736

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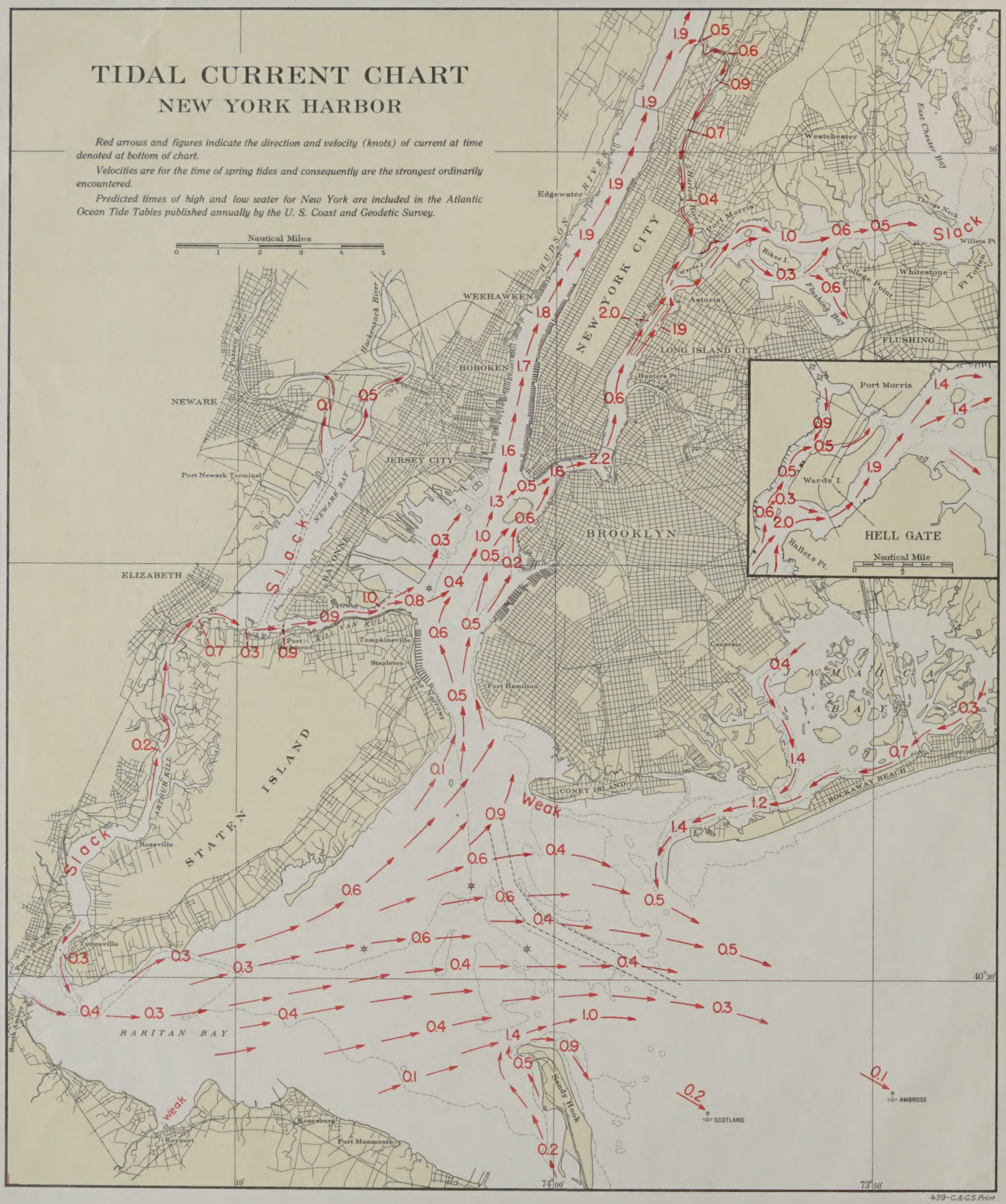

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ONE HOUR AFTER HIGH WATER AT NEW YORK

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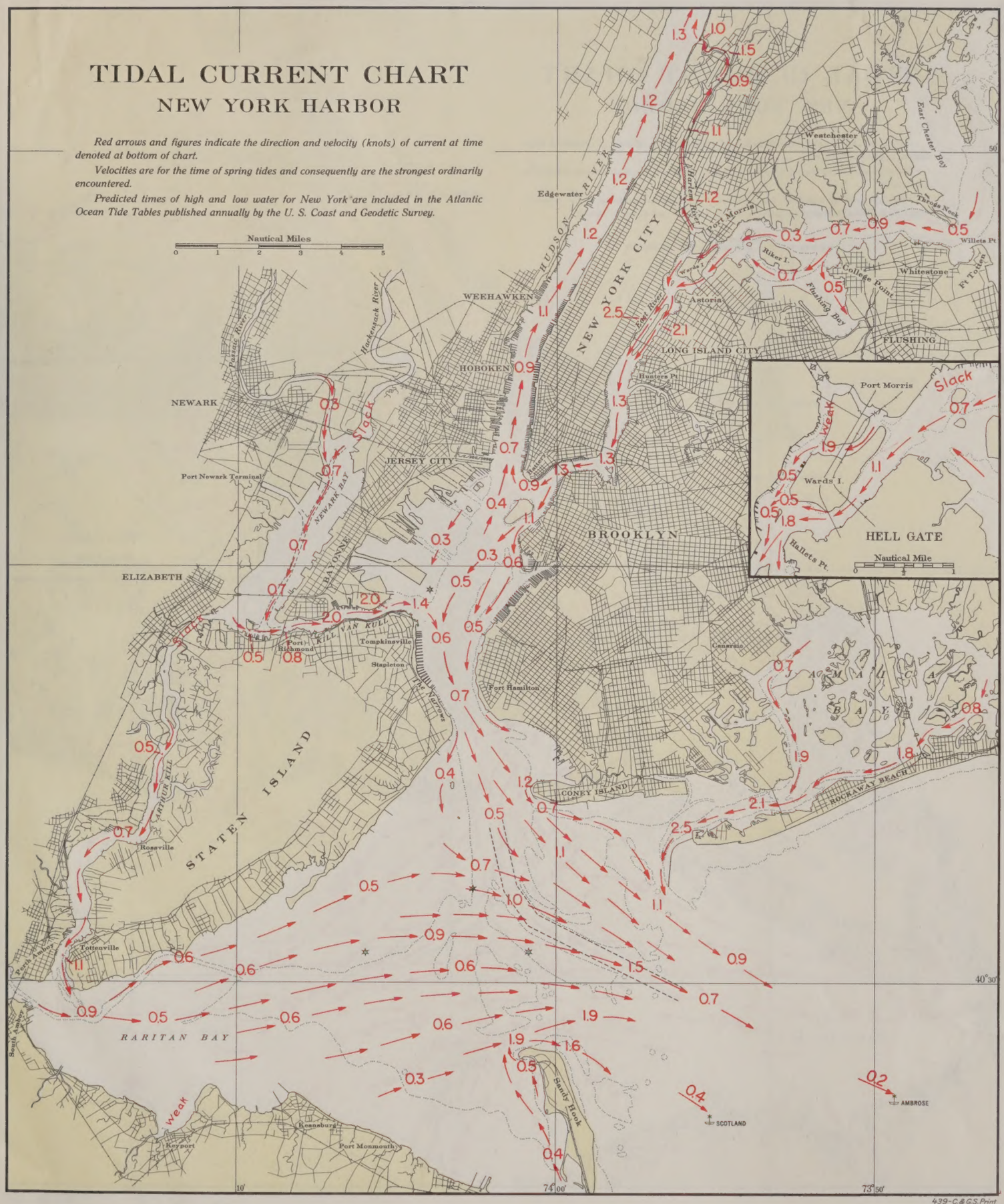

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TWO HOURS AFTER HIGH WATER AT NEW YORK

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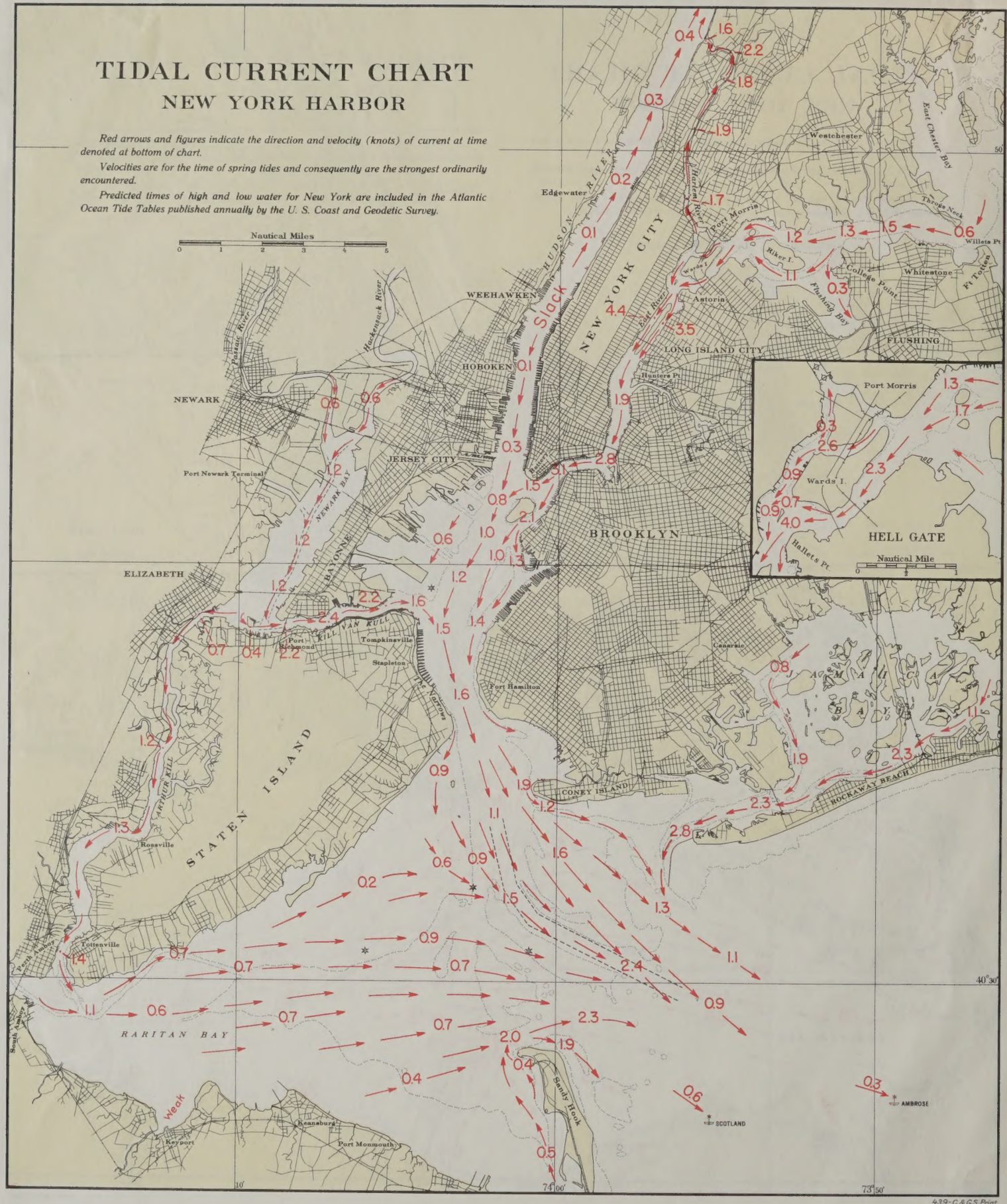

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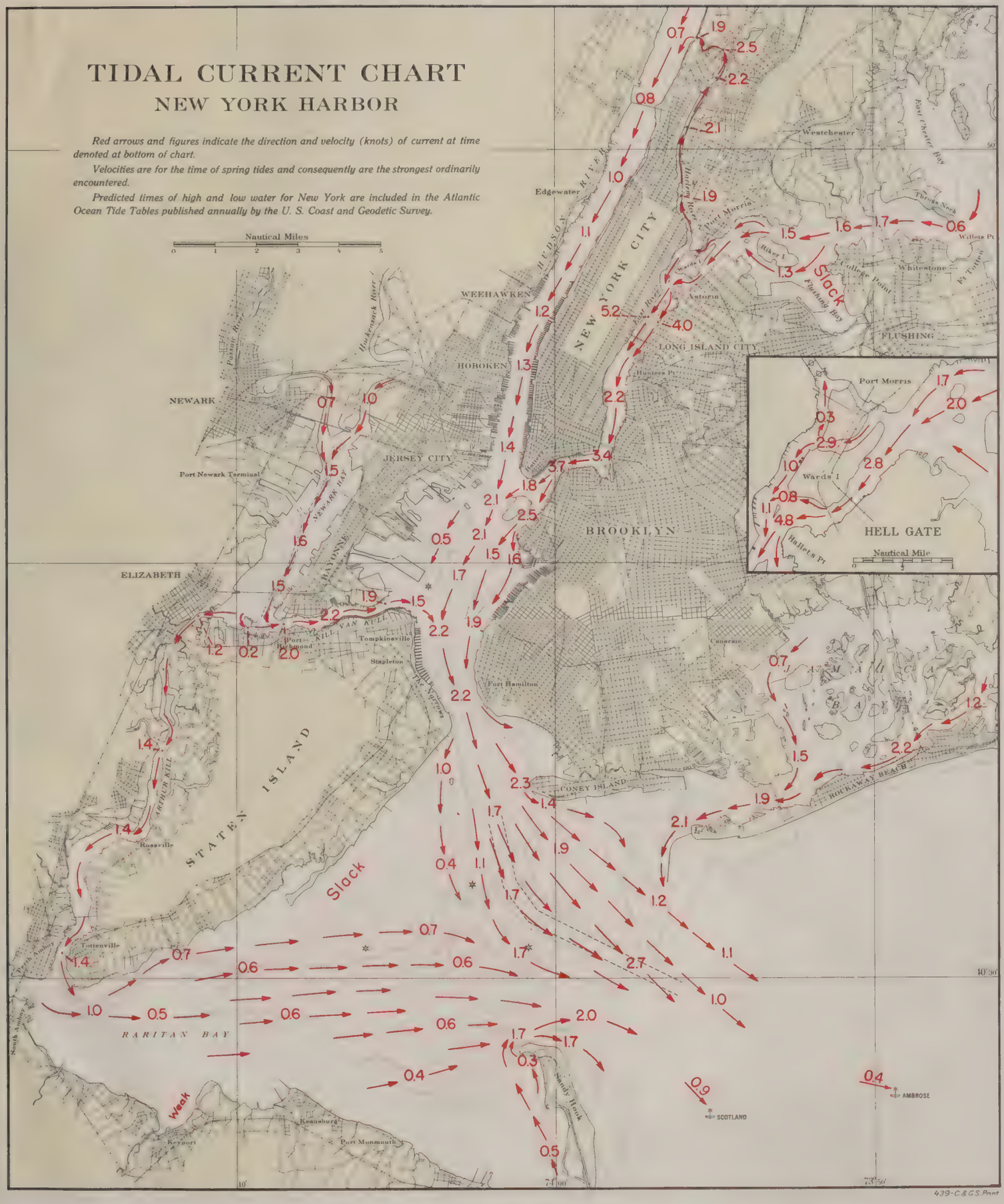

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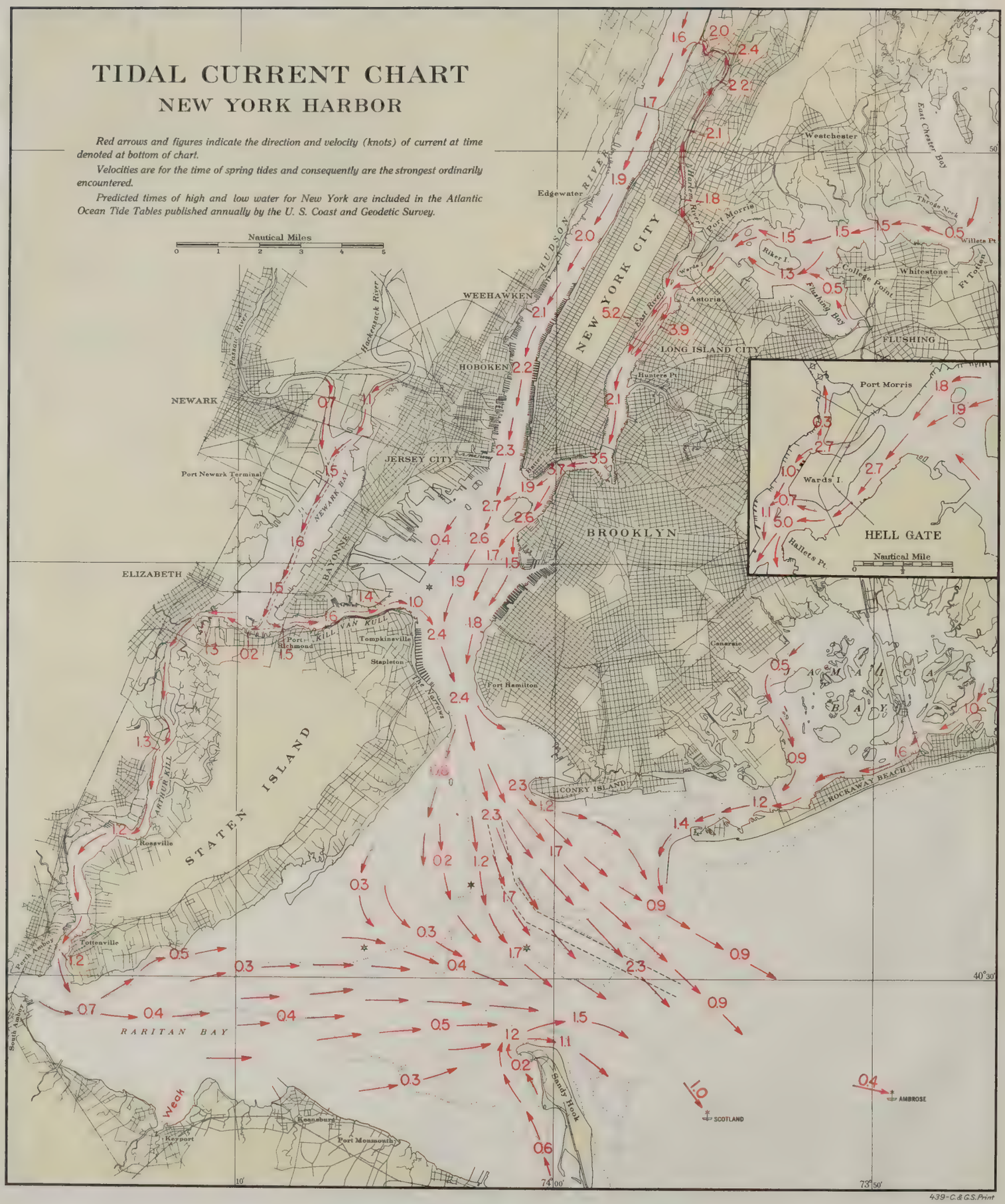

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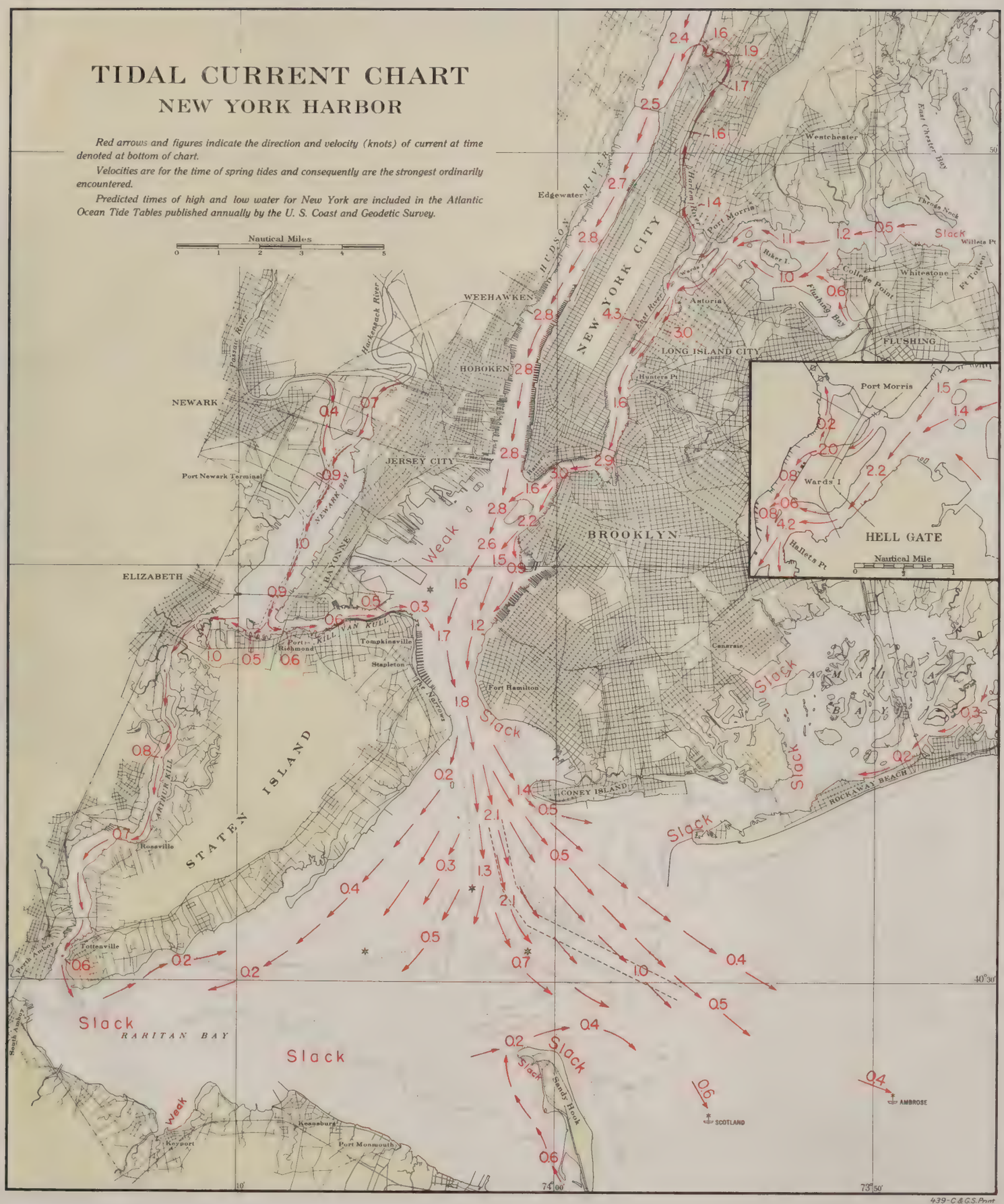

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LOW WATER AT NEW YORK

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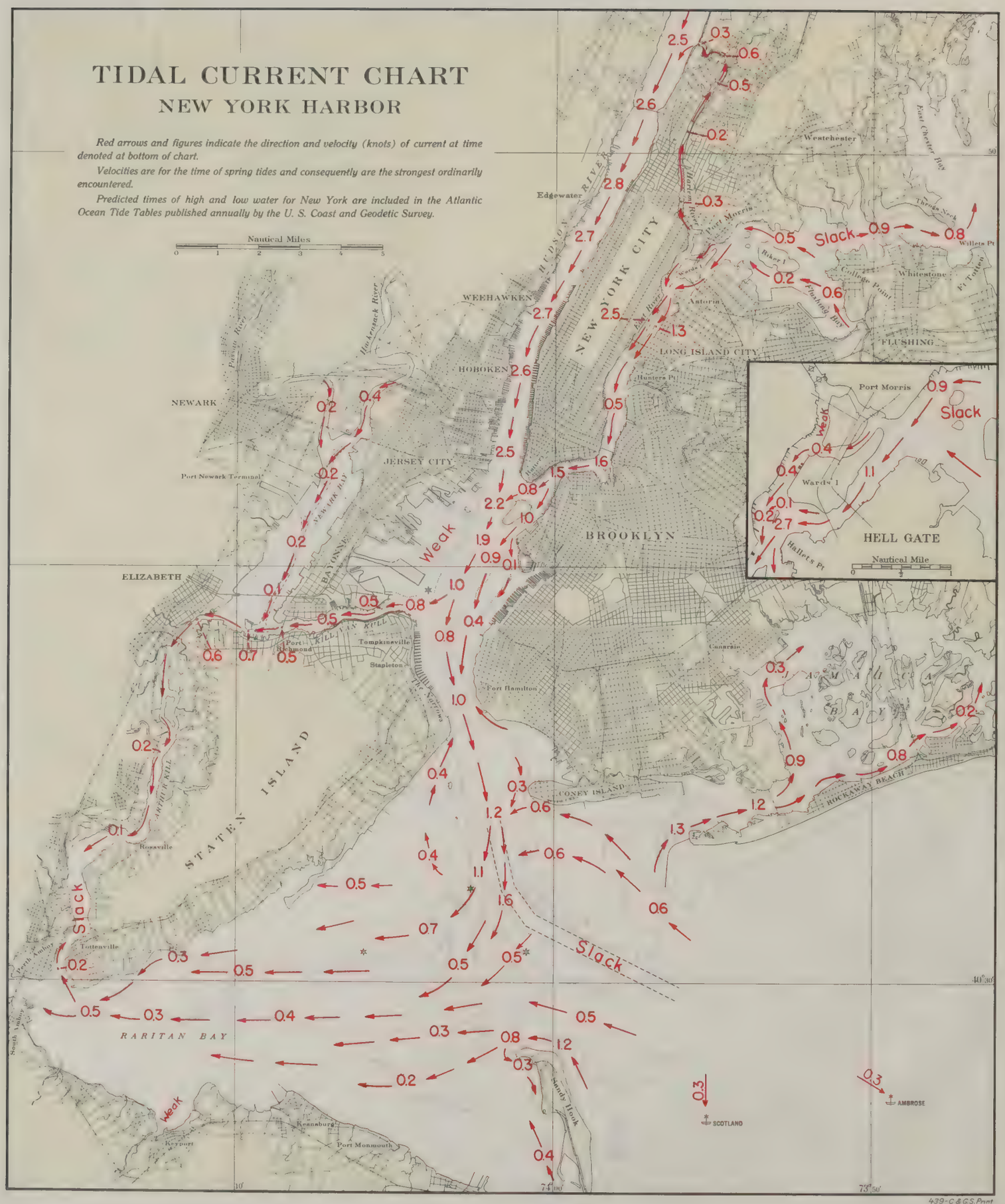

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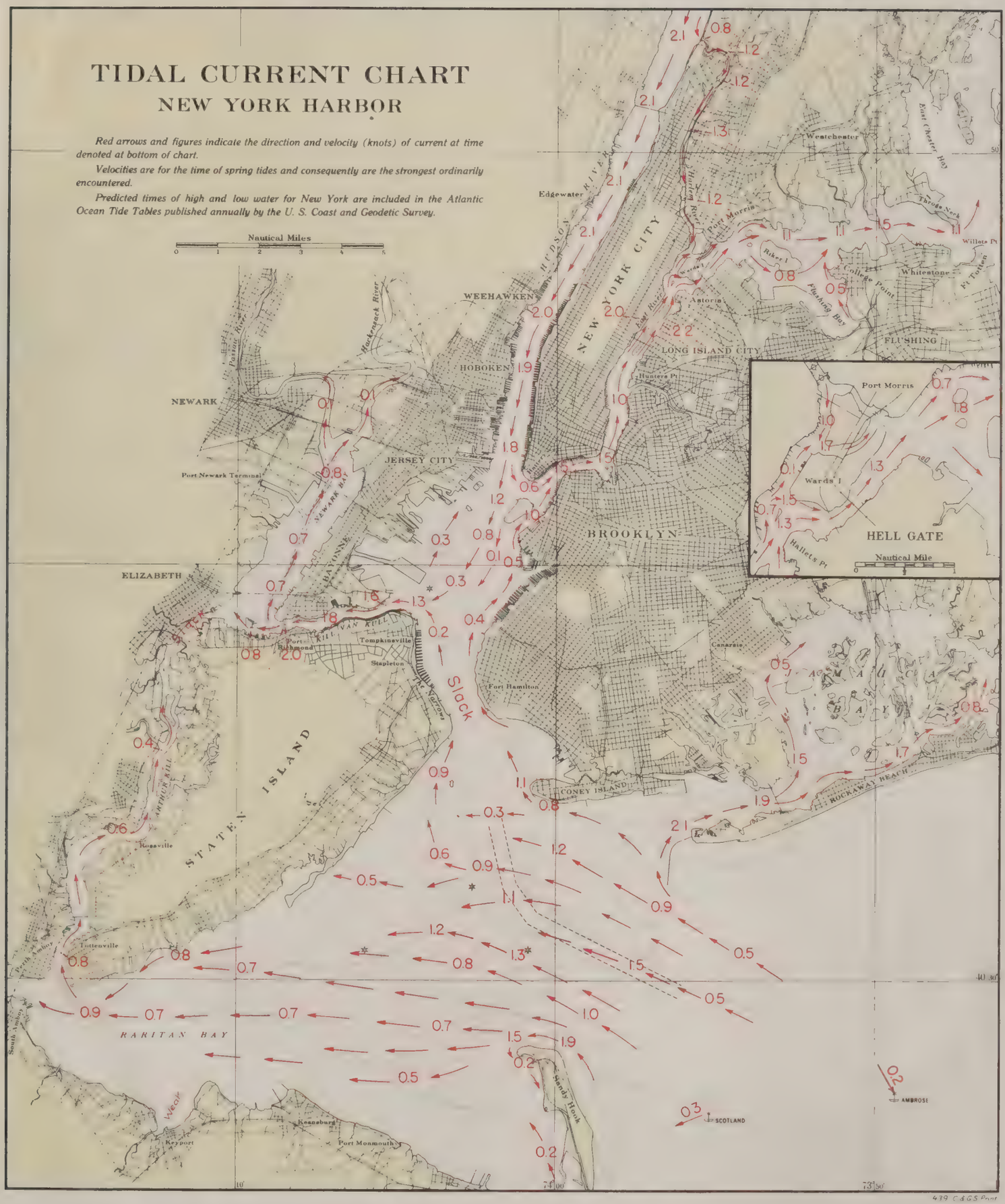

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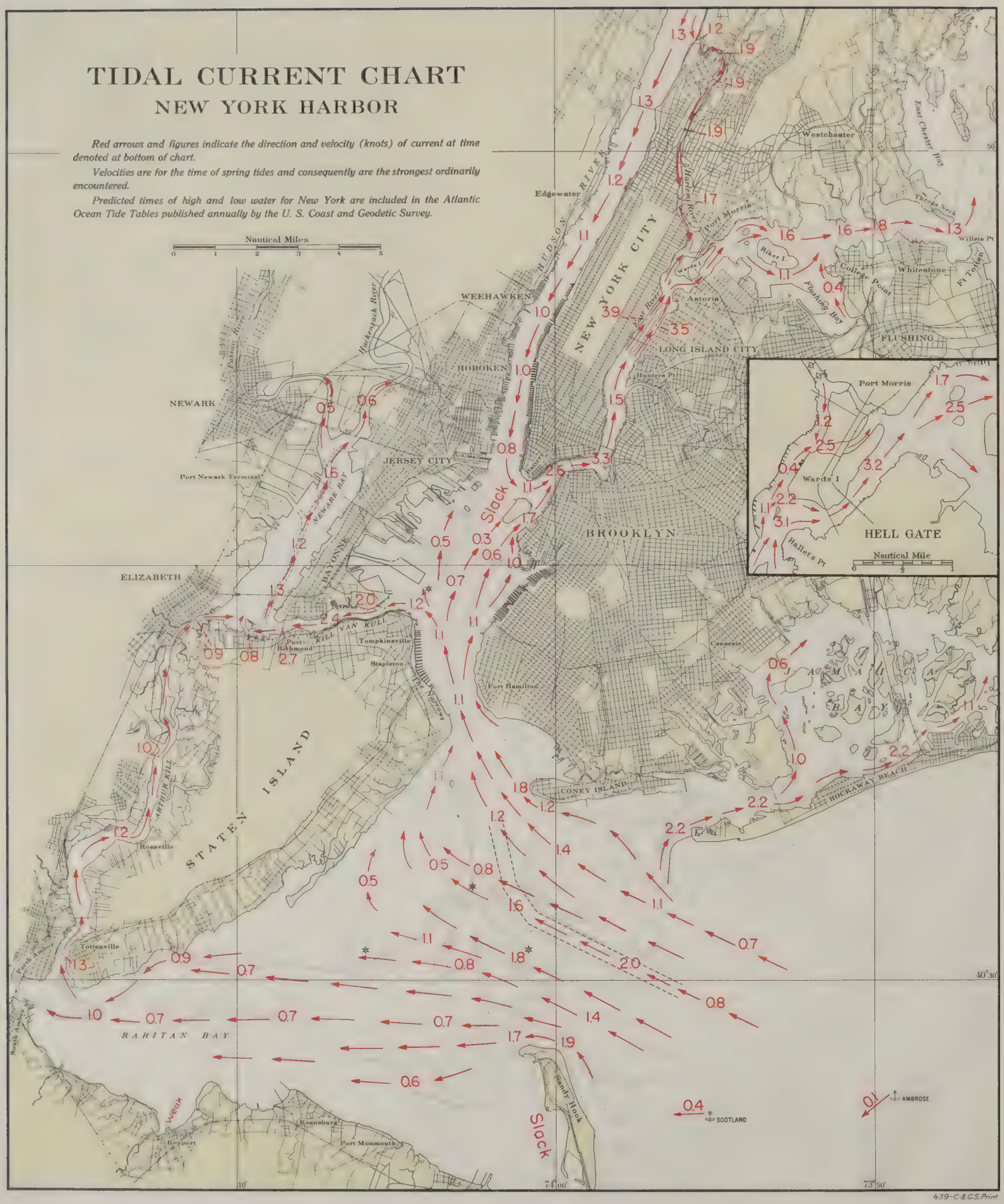

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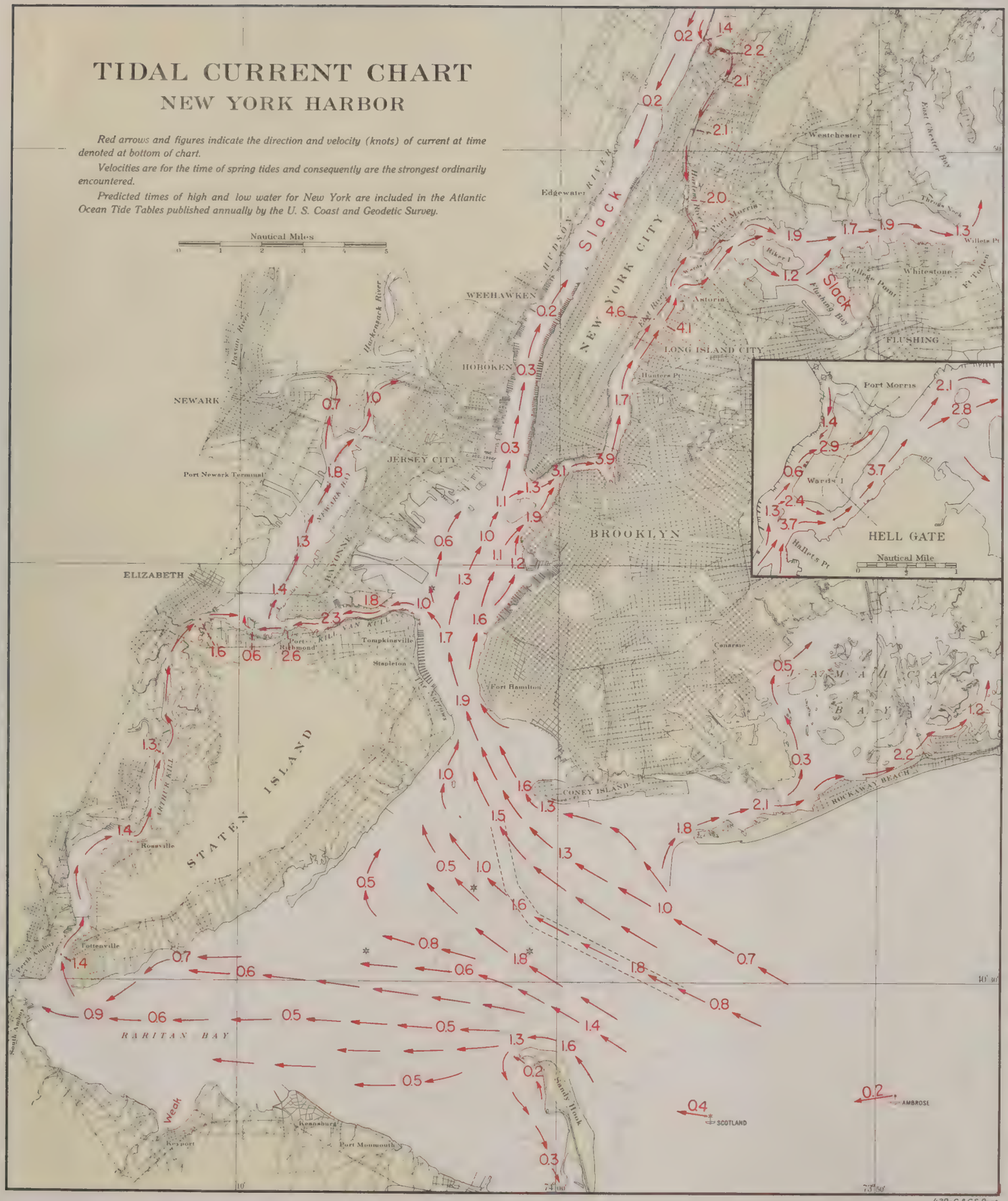

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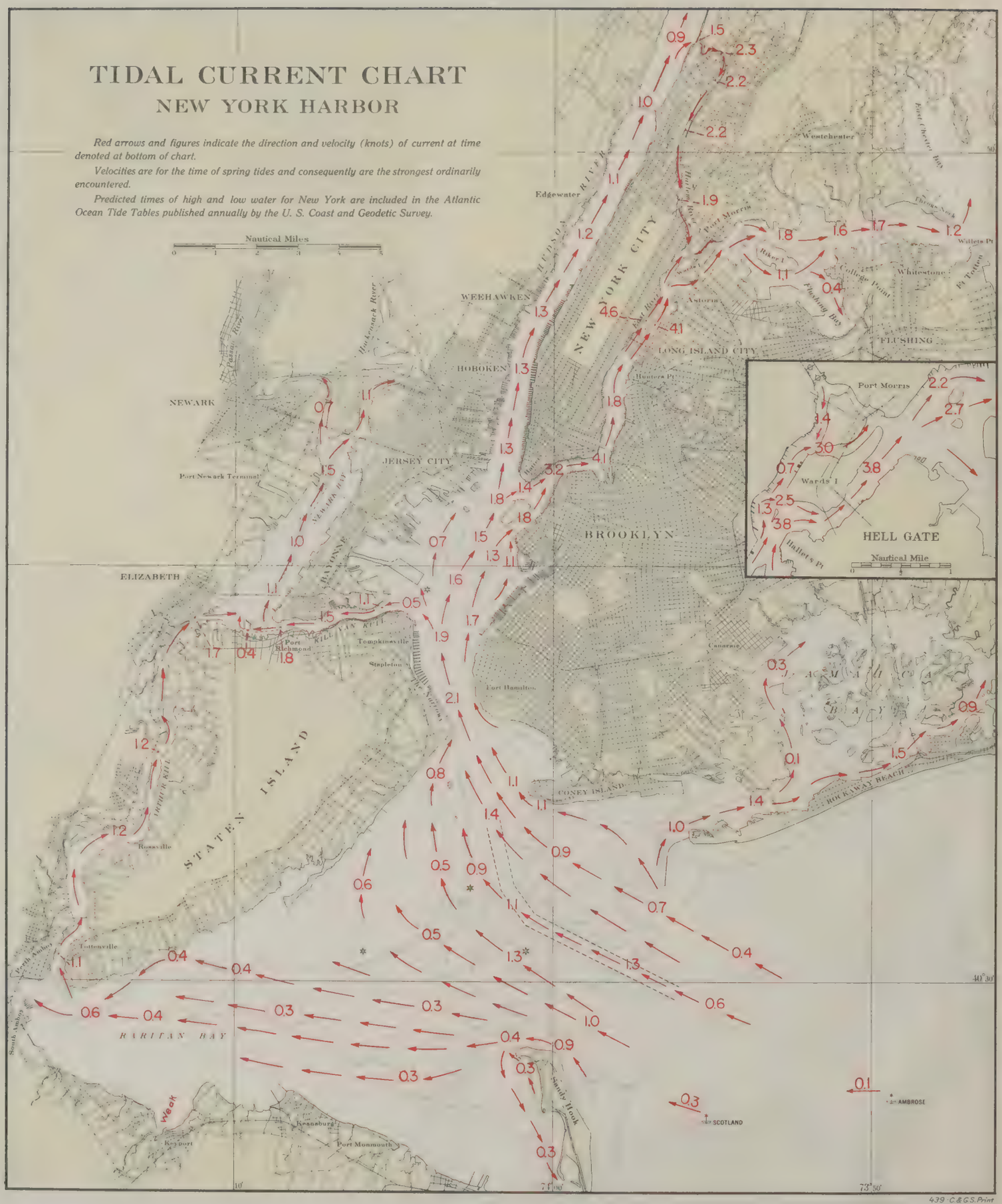

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